Hypofractionated 3D conformal radiotherapy in prostate cancer patients. Toxicity and outcome at 2 years of follow-up

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Purpose. To evaluate Biochemical-Free Survival (bNED) and acute and late toxicity in prostate cancer patients treated with Hipofractionated 3D Conformal Radiotherapy.
Methods and materials. Clinical records of the first 12 consecutive T1-T2 N0M0 prostate cancer patients treated with hypofractionated 3D Conformal Radiotherapy (50 Gy in 16 fractions within 3–4 week) in our department from 2008 had been reviewed. Gastrointestinal (GI) and Genitourinary (GU) acute toxicities were evaluated by the RTOG/EORTC scale. Late toxicity was evaluated by the modified Late Effect in Normal tissue Subjective Objective Management Analytic (LENT/SOMA). bNED was defined by the ASTRO consensus definition. Patient's mean age was 73 years (range 62–85 years). Mean PSA pretreatment was 29.03 (range 4.5–200 mg/dl). Stage T1c, 10 (83%); T2c, 2 (17%); Gleason 2–6, 10 (83%); Gleason 7, 2 (17%). Pretreatment PSA < 10, 7 (58%); PSA 10–20, 4 (33%); PSA > 20, 1 (8%). Median follow-up was 32 months (range 23–45 months).
Results. 2 years bNED survival was associated with pretreatment PSA level and Stage and Gleason score. Patients were grouped into Low (Stage T1–T2a; PSA < 10; Gleason < 6), 7 (58%); Intermediate (T2b; PSA 10 to 20; Gleason 7), 4 (33%); High (T2c; PSA > 20; Gleason 8 to10), 1 (8%) risk groups. The bNED was 92%. Only high risk 1 patient, after 38 months following has a relapse biochemical. GU acute toxicity was: Asymptomatic, 4 (33%); Grade (G) I, 4 (33%), GII, 1 (8%); GIV, 3 (25%) and GI Acute Toxicity was: Asymptomatic, 10 (84%); GI, 1 (8%). GI Late toxicity was: Asymptomatic, 11 (91.6%); GI, 1(8%) and GU Late Toxicity was: Asymptomatic, 3 (25%); GI, 5 (42%); GII, 3 (25%); GIII, 3 (25%), GIV, 0 (0%). Sexual Dysfunction: 4 (33%). Radiotherapy was delivered to a planning target volume with 4–6 field conformal technique to a dose of 50 Gy en 16 daily fractions.
Conclusions. 3D Hypofractioned Radiotherapy is well tolerated and its side effects and outcome are similar those of 3DCRT. In addition, hypofractionation offers a reduction in fraction number and produced attractive cost and increased convenience for patients.

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Hypofractionated concomitant boost in intermediate and high risk prostate adenocarcinoma

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Introduction. Moderate hypofractionated scheme of low-risk prostate adenocarcinoma radiation treatment is a suitable choice for shortening treatment length while keeping acute toxicity low. IMRT allows simultaneous treatment of several volumes at different dose levels. This makes IMRT a good option for intermediate and high-risk prostate patients to integrate the hypofractionated prostate boost, reducing the overall treatment length and maintaining a standard fractionation for seminal vesicles and pelvic lymph node.
Objectives. To demonstrate that hypofractionated treatment of prostate adenocarcinoma benefits all risk groups, using the concomitant boost for intermediate and high risk patients.
Methods. In October 2011 our department implemented moderate hypofractionation of low-risk prostate patients. The course of radiation therapy reduced to 27 fractions. To include intermediate and high-risk patients to this scheme, a pelvic lymph node with simultaneous prostate boost IMRT technique was devised. Treatment is daily image guided with CBCT for accurate prostate localization. Exhaustive training of the RTTs on CBCT image was needed. An empty rectum, filled bladder protocol was implemented. The hypofractionated scheme comprises a prostate fraction dose of 2.6 Gy, 27 fractions, summing up 82 Gy, 2 Gy/fr equivalent. Seminal vesicles and pelvic lymph nodes fractionation was calculated to obtained the isoefect dose in 27 fractions. As a result, 2.25 Gy/fraction to seminal vesicles PTV and 1.8 Gy/fraction to pelvic lymph nodes PTV were prescribed.
Results. 26 patients underwent the concomitant boost technique, 11 involving seminal vesicles plus pelvic lymph nodes irradiation and 15 seminal vesicles. Only one patient showed gastrointestinal and genitourinary G3 toxicities, requiring urinary catheterization the last day of treatment. The rest of patients showed similar gastrointestinal and genitourinary G1 toxicities as those described for the standard 2 Gy/fraction scheme.
Conclusions. Intermediate and high-risk prostate patients benefit from the image guided IMRT hypofractionated concomitant boost technique. Affordable toxicity at organs at risk, accurate dose administration and shorter overall treatment length are the main advantages.

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